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**"An Overview Briefing with Administrator Griffin"**

SPEAKERS:

**MICHAEL GRIFFIN**, NASA Administrator  
**BILL GERSTENMAIER**, Associate Administrator  
for Space Operations

[Moderated by Dean Acosta, NASA Press Secretary]

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Kennedy Space Center

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## 1 P R O C E E D I N G S

2 MR. ACOSTA: Welcome to the Administrator  
3 briefing here on L Minus One at the Kennedy Space Center.  
4 I am Dean Acosta. To my left, I have the Administrator of  
5 NASA, Dr. Michael Griffin, and to his left, Associate  
6 Administrator for Space Operations, Bill Gerstenmaier.

7 Now we will have some opening remarks, and then  
8 we will go to some questions and answers for a good 30, 45  
9 minutes. We will go as long as we need to go.

10 I might ask that folks please ask your questions  
11 during the briefing, and respect the fact that when the  
12 briefing ends, I would like to limit and not have reporters  
13 come up and gaggle afterwards. So ask your questions now,  
14 please.

15 I ask that you identify yourself and identify the  
16 question to whom you want to ask when you ask your  
17 question.

18 All right. I appreciate that. We will start off  
19 with some opening remarks, and then we will go to your  
20 questions.

21 Mike?

22 ADMINISTRATOR GRIFFIN: Well, my opening remarks

1 will be quick. We are here to resume the Shuttle Return to  
2 Flight process. This is our second in our sequence. The  
3 vehicle is remarkably clean, just as clean as certainly  
4 I've ever seen and I think most of us have ever seen. So  
5 we're looking forward to good weather, and when we have it,  
6 we're going to be ready to go.

7 All right.

8 MR. GERSTENMAIER: Thanks, Mike.

9 Again, my comments are pretty similar. Things  
10 are going very well in terms of processing the vehicle,  
11 getting ready for flight. It all looks good. We are  
12 looking forward to increasing the size of the crew on board  
13 Space Station to three, getting our group complement back  
14 to three. We are looking forward to having the oxygen  
15 generation system delivered to Space Station. We are  
16 looking forward to the minus-80-degree freezer being  
17 delivered to Space Station, and we have a pretty exciting  
18 mission in front of us. So we are looking forward to all  
19 that.

20 The preparations have gone extremely well down  
21 here. The teams have done a great job.

22 I just got back from the L-Minus-One review, and

1 really, all of the issues are closed. There is really  
2 nothing that's being worked, and we are ready for the  
3 tanking meeting tomorrow morning at about 4:45. So, again,  
4 things are just going extremely well, and we are looking  
5 forward to a pretty exciting mission and getting back into  
6 assembly of Space Station.

7 MR. ACOSTA: All right. We will go ahead and go  
8 to your questions. Let's start off with some questions  
9 here. Nobody bashful. Oh. All right.

10 Actually, let's go right up front to Mike.

11 QUESTIONER: That Mike.

12 MR. ACOSTA: The other Mike.

13 QUESTIONER: I have a question for the  
14 Administrator. First of all, Mike Schneider, Associated  
15 Press.

16 You have taken some heat over the past 2 weeks  
17 since the Flight Readiness Review meeting over the decision  
18 to go fly and overruling the safety officer and the chief  
19 engineer. I was wondering if everything goes off cleanly  
20 tomorrow without any problems, will you feel somewhat  
21 vindicated that your decision was the right one?

22 ADMINISTRATOR GRIFFIN: Certainly not. You guys

1 have made a lot more out of what I would say the various  
2 technical disagreements and technical positions than I have  
3 or than any of us on the management team have.

4 What you are seeing -- maybe for some of you who  
5 don't have an extensive background in this business or in  
6 other engineering-related businesses, what you are seeing  
7 is a good process. Maybe you haven't seen it before.

8 We come to these things to debate and discuss  
9 issues which are subtle and difficult and which don't have  
10 a clear and obvious answer. If they had a clear and  
11 obvious answer, they would have been settled long ago.

12 We want the best people we have bringing their  
13 points of view to the table. We want to debate and discuss  
14 and analyze as best we can, knowing that on some days, as  
15 best we can is not good enough. We try hard to get it  
16 right.

17 The fact is that most of the time in meetings  
18 like our Flight Readiness Review that you refer to or any  
19 other meeting that we have, there will not be unanimity of  
20 opinion.

21 NASA was criticized after Columbia because we,  
22 some managers, it was said, tried to enforce a certain

1 conformity of opinion. Since arriving in this post, I have  
2 made it clear that I personally want and believe that every  
3 engineer and every manager working for us has a right and  
4 an obligation to express the best opinion that they can  
5 give us.

6 We get all of those opinions on the table. We  
7 get all the background that we have on the table, and then  
8 the senior managers have to make a decision. That is what  
9 we do.

10 I think sometimes people mistake the desire to  
11 hear all of the opinions with the ability to agree with all  
12 the opinions. Agreement is not offered. What is offered  
13 is a willingness and a desire to hear and an obligation to  
14 speak, and I think that is what we try to do.

15 MR. ACOSTA: All right. Next question. Let's go  
16 along the wall. I don't know how difficult that's going to  
17 be. Actually, you know what, go to the third row, John  
18 Schwartz.

19 QUESTIONER: Hello. John Schwartz, New York  
20 Times.

21 Dr. Griffin, last year about this time, you were  
22 asked if these early decisions about STS-114 were

1 difficult. At that time, you said you hadn't made any  
2 difficult decisions. Have you made any since then --

3 ADMINISTRATOR GRIFFIN: No.

4 QUESTIONER: -- with special emphasis on --

5 ADMINISTRATOR GRIFFIN: Actually not, John.

6 Gerst and I and Wayne Hale and others who have  
7 been involved in the program, frankly, the decision to fly  
8 coming out of FRR, which everyone seems to find so  
9 controversial, on the technical merits to me made itself.

10 Flying the Shuttle is not without risk for many  
11 reasons way beyond foam, and in fact, I worry that we spend  
12 so much time worrying about foam that we won't worry about  
13 other things which could get us. We have tried to address  
14 them all.

15 Foam is a concern, but I very strongly feel that  
16 we are not risking crew for foam in this case or I wouldn't  
17 feel comfortable launching. I believe I understand at a  
18 very deep level the technical components that went into the  
19 decision, and frankly, I think it makes itself. So I  
20 didn't regard it as difficult at all.

21 Now, it was time-consuming. I personally, even  
22 as Administrator, have spent weeks of my time on this issue

1 to make sure that I have heard everything that everyone had  
2 to say and understood the analyses in a very deep way. So  
3 it was time-consuming, but in the end, I think the data  
4 speaks for itself just fine.

5 MR. ACOSTA: All right. Let's stay along the  
6 wall. Let's go to Tracy Watson, right there.

7 QUESTIONER: Tracy Watson, USAToday.

8 We have heard several times that to launch the  
9 next vehicle in the next window, you are going to have to  
10 expedite your process of looking at all the anomalies off  
11 this flight, and I guess this is for Mr. Gerstenmaier.

12 Are you then putting yourselves at risk of going  
13 through that process too quickly, you are going to have to  
14 speed it up so much more than you have had to over the last  
15 couple of years that you will not do a thorough job?

16 MR. GERSTENMAIER: Again, we are going to take  
17 our time and see what the vehicles gives us and look at  
18 each anomaly we get and work it as hard as it needs to be  
19 worked, and if it comes up that we can't get the answer in  
20 the time required, we will move the flight where we need to  
21 go move the flight.

22 But again, I think the teams are ready. We have



1 actually done some simulations where we have looked at  
2 processing some data after this flight to make sure we can  
3 turn it around and get the analysis done, completed early,  
4 so we are ready, we are prepared, and we will see what  
5 anomalies we get. We will work them thoroughly, and we  
6 won't cut any corners. We won't take any shortcuts. We  
7 are going to do it exactly the right way.

8 MR. ACOSTA: All right. Stay long the wall with  
9 Mark.

10 QUESTIONER: Mark Karo from the Houston  
11 Chronicle.

12 ADMINISTRATOR GRIFFIN: We will give everybody  
13 time to get their questions in. Don't panic. We will give  
14 you time. So let us just work through them.

15 Go ahead, Mark.

16 QUESTIONER: Thank you, and mine is for you, sir.

17 It has taken, I think, 41 months, if I count  
18 right, to come back from the Columbia accident at this  
19 point, and my question is your thoughts on why it has taken  
20 that amount of time and whether that has been a good thing  
21 or a bad thing for the Shuttle program and for the Manned  
22 Space Flight program.

1           ADMINISTRATOR GRIFFIN: I mean, I've been in the  
2 space business for 35 years. It is for me the most  
3 rewarding business that can possibly be and the most  
4 demanding and difficult one. I have said publicly in  
5 speeches and in other venues that space flight in all of  
6 its various forms is the most technically challenging thing  
7 when you look across the spectrum of what is required that  
8 a nation or a society can do. We are right at the  
9 frontier.

10           With regard to the Shuttle and the loss of  
11 Columbia, we clearly found that we in the engineering  
12 community had not fully understood the external tank and  
13 the orbiter as a system and we had not understood in detail  
14 the way that the foam behaves.

15           We thought it was a maintenance issue. It was  
16 certainly annoying, but we thought it was a maintenance  
17 issue and not a hazard, and I'll say we because, for quite  
18 some time in the early '90s, I was the NASA chief engineer  
19 and before that an Associate Administrator of this agency,  
20 and I accepted that it was a maintenance issue. So that  
21 was my mistake along with many, many other peoples.

22           When you are operating at truly the

1 state-of-the-art, at the edge of the frontier, it is easy  
2 to make mistakes. If the management culture is not exactly  
3 right, as the CAIB pointed out, it is even easier to make  
4 those mistakes.

5 So we have taken a full and measured period of  
6 time to try to, in three short words, fix the foam. We  
7 found after STS-114 that there were still things about the  
8 foam that we didn't understand.

9 I am hoping we understand enough about it now  
10 that this flight will come off with no more than the  
11 expected amount of foam loss, which we, again, expect to be  
12 small pieces released at times which are acceptable that  
13 truly can't hurt anything.

14 That is why, in part, this flight is not solely a  
15 test flight. The Space Station program needs this flight,  
16 but there are aspects of this flight that are a flight test  
17 in the classical meaning of the word, and there is data we  
18 need to get about how foam behaves as it comes off this  
19 tank or hopefully stays on that we can only get by flying.

20 So I would not say that we have taken too long.  
21 I would say that we have taken the right amount of time,  
22 and we are ready to fly. We hope that we learn some

1 things. We hope that what we learn is that we did, in  
2 fact, understand it.

3 MR. ACOSTA: All right. Next question. We will  
4 stay down the wall and go with Tarik.

5 QUESTIONER: Thank you. Tariq Malik with  
6 Space.com and SpaceNews for Administrator Griffin.

7 ADMINISTRATOR GRIFFIN: Sorry, Gerst.

8 [Laughter.]

9 QUESTIONER: Yesterday, we heard from Allen  
10 Thergeddle [ph] about expectations with Thomas Reiter's  
11 arrival at the station, and I am curious to hear from you.

12 At this point, were you able to at least represent them on  
13 the Station with an astronaut? How critical is this flight  
14 to NASA's obligations to its European and Russian and other  
15 international partners to continue to Station program?

16 ADMINISTRATOR GRIFFIN: Well, we want to get the  
17 Station crew back to three, and then as soon as we can,  
18 when the assembly sequence permits, we want to get the crew  
19 to a larger level.

20 Fundamentally, we are building the Space Station  
21 as a permanent toehold off of Earth for our expansion into  
22 space. That is the first step, not the last step. So, to

1 do that, we need to use it, and to use it, we need to have  
2 crew on board who are capable of doing useful things. And  
3 that means more crew, rather than less.

4           So putting three people back aboard is a big step  
5 forward in the health of the program. If we can do it, we  
6 want to. We want to move down the road and get this  
7 project completed, not so much -- you alluded to a sense of  
8 obligation. Yes, we have obligations to our partners, and  
9 we intend to fulfill them, but our partners have been very  
10 understanding of the fact that we are coming through a very  
11 tough time in the American Space program, and we are kind  
12 of doing the best we can here. I think they have  
13 understood that quite well.

14           ADMINISTRATOR GRIFFIN: Gerst, do you want to add  
15 to that?

16           MR. GERSTENMAIER: No. I think, again, there is  
17 really nothing to add, much more than what Mike said. I  
18 think it is neat that the partnership has endured through  
19 this tough time, and this is kind of symbolic that as we  
20 increase the crew size to three, we are doing it with some  
21 international partner participation. So I think that is a  
22 positive step for the overall strength of the Station as a

1 team, an international partnership.

2 MR. ACOSTA: All right. Next question. Staying  
3 down the wall, go with Mike Cabbage.

4 QUESTIONER: Mike Cabbage with the Orlando  
5 Sentinel. My question is for Dr. Griffin.

6 The crew has characterized this flight as having  
7 a lot of importance, maybe more so than other Shuttle  
8 flights for it is the one that gets the Shuttle program and  
9 the Station program back on track, and there has also been  
10 a lot of speculation about what might happen to the Shuttle  
11 program itself if, for example, you saw big pieces of foam  
12 come off during launch tomorrow or things of that sort.

13 Do you see this flight as having any sort of  
14 higher stakes or big-picture significance beyond any other  
15 Shuttle flight, or is this just another test flight that is  
16 going to the International Space Station?

17 ADMINISTRATOR GRIFFIN: There is no Space Shuttle  
18 flight that is "just another flight," and there is, in my  
19 mind, to be honest with you -- others may have a different  
20 opinion. There is no one of them the same, more important,  
21 than another.

22 We have pared the Space Station assembly sequence

1 down to the bare bones necessary to finish the project, and  
2 what that means is every one of them is important, every  
3 single one.

4 By the time a crew launches, any crew, they have  
5 become friends of mine, people that I know and care about.

6 There is not any one of them that is more or less  
7 important than the other.

8 MR. GERSTENMAIER: And I would stress to you on  
9 the foam, we talk about it being fairly small mass. You  
10 know, it could be a fairly large surface area of foam we  
11 lose. So it may be very visually large to you when you  
12 look at it, but if the thickness is not very much, as we  
13 have seen in some of the pictures I have showed you in the  
14 previous press conferences, that could be absolutely no  
15 concern to us. So we need to be careful as a team that  
16 when we look at this and we see things that look visually  
17 pretty poor, you know, on the order of maybe even 85 square  
18 inches, that could be very much a non-problem to us and  
19 very much expected to what we see.

20 So we need to be very careful when we see this  
21 video and see some of the foam loss that we don't jump to  
22 conclusions about what it means in the overall program

1 sense. I ask you to just take a little bit of time, let us  
2 analyze it, let us understand it, and we will be open and  
3 honest with you and tell you.

4 Likewise, it may be something very small that  
5 doesn't look like a big deal to you, but to us, it may be  
6 very serious and very inconsistent with our theories and  
7 the process we have in place for foam, and we will share  
8 that with you too if that has concerns.

9 So just be patient with us. Let us take a little  
10 bit of time to analyze the film, the video, and take a look  
11 at the data that we see, but we do expect to see foam, and  
12 even though it may be small mass, it may be in appearance  
13 -- not look so good.

14 MR. ACOSTA: All right. Last question down the  
15 wall, and then we will try to come to the other side of the  
16 room. So let's go with John.

17 QUESTIONER: Dr. Griffin, given that the FRR  
18 process was -- I don't want to say -- was an open debate  
19 and you have talked a lot about openness and everything,  
20 can you go over for me the rationale for not releasing the  
21 documentation from that when you have done so in the past?  
22 What would be the reason? Is there something there that



1 you don't think the public should see or could understand,  
2 maybe too complicated? What is the reasoning, I guess, for  
3 not releasing that documentation?

4 ADMINISTRATOR GRIFFIN: Well, let me start with  
5 the intent of the Freedom of Information Act, which is to  
6 provide transparency into Government decisions and  
7 decision-making, and, of course, as goes without saying, we  
8 honor that, but the Act itself recognizes the difference  
9 between discussions which are pre-decisional in nature and  
10 those which are decisional in nature.

11 Now, Flight Readiness Reviews and other technical  
12 meetings that we have are, by their very nature,  
13 pre-decisional. Okay? That is the material which feeds  
14 into the decision. There is no doubt -- there is no doubt  
15 -- and this is why the Act recognizes this fact -- there is  
16 no doubt that if every participant in a technical review, a  
17 Flight Readiness Review or many of the other milestone  
18 reviews that we have -- if the participants of those  
19 meetings, if each and every participant knew that his or  
20 her comments were to be available for the worldwide media,  
21 they might withhold some of their comments.

22 We are caught between a rock and a hard place

1 here. The CAIB recognized, you recognize, I certainly  
2 recognize that we want openness on our communications and  
3 in our discussions. So we fail to promote that goal if we  
4 provide an environment that creates a chilling effect or  
5 has the potential to create a chilling effect for some of  
6 our participants. Not every engineer or scientist is as  
7 outgoing as some of you in the media.

8 QUESTIONER: Shocking.

9 [Laughter.]

10 ADMINISTRATOR GRIFFIN: I know you're shocked.

11 So we provide an environment in which we hope  
12 everyone feels that it is safe for them to make their  
13 comments. We take all of those in. We make the decisions  
14 we make, and we tell you what those were, and we tell you  
15 the rationale, as I did 2 weeks ago. We tell you the  
16 rationale behind the decision.

17 In the case of the Columbia accident, because  
18 there was an accident investigation, yes, we did release  
19 that information. We released the briefing charts on  
20 STS-114. Frankly, I think if we had it to do over again,  
21 we wouldn't do it because then I wouldn't be answering the  
22 kind of question you are asking me today. "You did it

1 before. Why not do it again?"

2 Well, if I have made a mistake before, I am not  
3 going to continue to make the mistake if I believe that it  
4 was a mistake. I am at some point going to stop.

5 I think I have answered your question as frankly  
6 as I can.

7 MR. ACOSTA: Yes, you did.

8 Okay. Let's come back on this side of the room.  
9 Let's go to the second row, Randy.

10 QUESTIONER: Randy Avera, Randolph Publishing.

11 We have learned, over the past 3 years, the  
12 complexity of the design of the external tank, and it gives  
13 great credit to the designers in the '60s and '70s that  
14 made that external tank.

15 The external loads that have been looked at for  
16 Return to Flight, the applied loads on the outside of the  
17 external tank, we know the re-pressurization lines have  
18 been looked at and the mounting brackets, but we also have  
19 the 17-inch feed line with liquid oxygen flowing through it  
20 for the main engines, and from the last flight, the  
21 on-board cameras, we could see the vibration of that  
22 17-inch feed line with the liquid oxygen in there flowing

1 through the pipe.

2           Could you tell us what NASA has done to look at  
3 the vibration loads and the response of the skin of the  
4 external tank? Has that been looked at, and what is the  
5 outcome of that? What I am talking about are applied  
6 external loads and the response of the skin.

7           ADMINISTRATOR GRIFFIN: We did discuss all that,  
8 actually.

9           Yeah, your turn.

10          MR. GERSTENMAIER: What we really looked at was  
11 when we were moving the protuberance airload ramp, the ramp  
12 that deflects the air over the cable trays and the  
13 pressurization lines.

14          We looked at that both from a static standpoint,  
15 what the load would be on those lines from just the  
16 aerodynamic pressures on those lines, and we also looked at  
17 it from a dynamic standpoint, a buffet standpoint.

18          Again, as a tribute to the team, we found out  
19 when we did that, we had some wind tunnel data that we got  
20 at the Glenn Research Center where we had two transducers  
21 switched. We thought one was on the top and one was on the  
22 bottom. We had a wiring misconfiguration, which we

1 discovered after the Flight Readiness Review.

2           We went back and took that actual information of  
3 the switch of the wires, went back and re-calculated the  
4 power spectral density of the dynamics associated with that  
5 and re-calculated the strength of those lines to make sure  
6 that they were okay. So we went back when we discovered  
7 this miswiring, actually went back and re-validated again  
8 the dynamic environment.

9           So we spent a lot of time looking at what this  
10 recent change did to the tank. There is probably a  
11 thousand pages of stress reports that include both static  
12 and dynamic data associated with those cable trays and  
13 press lines. We looked at all that again. We reviewed our  
14 analysis we had done originally on the tank to make sure  
15 there were no surprises there. We found some things we  
16 would like to redo again, and we redid those, and we  
17 updated them.

18           So I think that is another thing we need to take  
19 away from this is we need to periodically always go back  
20 and re-look at our calculations, re-look at the way we have  
21 tested, the way we have certified because new techniques  
22 have come in place, new computer models are available to

1 us. So, as a learning organization, we need to go back and  
2 review that to make sure that it is correct.

3 QUESTIONER: As part of that review downstream  
4 from today, that includes a super lightweight tank. I  
5 think the tank is about 10,000-pounds lighter than the  
6 1980's version, and the analysis that you have done for the  
7 locks feed line also includes the skin of the super  
8 lightweight tank. Correct?

9 MR. GERSTENMAIER: We looked at it, consistent  
10 with the design we are flying.

11 Thank you.

12 MR. ACOSTA: Next question. Let's go to John.  
13 Stay on the second row, middle.

14 I didn't recognize you with the beard.

15 QUESTIONER: Yeah. John Johnson, Los Angeles  
16 Times.

17 I wanted to ask a question about the incident  
18 down at Johnson Space Center. If the situation involving  
19 Charlie Comarda [ph] wasn't somebody being punished for  
20 speaking out, what was it?

21 ADMINISTRATOR GRIFFIN: Okay. I give you my word  
22 that it wasn't anyone punished for -- being punished for

1 speaking out. You can accept that or not, your choice.

2 Charlie had a disagreement over a management  
3 issue, utterly unrelated to STS-121 or even to the Space  
4 Shuttle program at all. Charlie had a management  
5 disagreement with his boss, Center Director Captain Coates.

6 They spoke about the issue, and Mike made the  
7 decision that Charlie would be relocated to another  
8 position. That is his prerogative, and he exercised it. I  
9 suppose Captain Coates' decision, and in fact, both Charlie  
10 and Mike are friends of mine, known them for a long time,  
11 have a very high regard for both of them.

12 Charlie is not lost to the agency. He is a very  
13 senior technical person whose capability is highly  
14 respected. He will be working with the NASA Engineering  
15 and Safety Center, and in fact, he will be a part of the  
16 Mission Management Team for this flight. He will be part  
17 of the Mission Management Team for this flight.

18 I'm sorry that the perception has been created  
19 that this is in any way connected to STS-121. It's not.

20 I had two choices. In fact, Mike called and  
21 said, "You know, I need to move Charlie, and I want to know  
22 if the timing of it is going to cause you any concern," and

1 I said, "Do what you need to do. Do it when you need to do  
2 it, and the timing is my problem," because, from my  
3 perspective, if we were to alter the timing on a management  
4 action that a senior manager wanted to take merely to avoid  
5 concerns about media perception, we would be guilty of  
6 exactly the same kind of spin that I have said so many  
7 times we will not tolerate at NASA.

8 Okay. We do what we need to do, and then we'll  
9 explain it to you. I can explain it to you. I can't  
10 understand it for you.

11 [Laughter.]

12 MR. ACOSTA: Let's move on. All right. Let's  
13 stay right here, front row.

14 QUESTIONER: Curtis Krueger, St. Petersburg Times  
15 for Mr. Griffin.

16 Could you tell us what would be the negative  
17 aspect of waiting for the redesign of the ice/frost ramp?  
18 Would that 6 months prevent you from finishing the Space  
19 Station by 2010, or what are the negative things that would  
20 result from that delay?

21 ADMINISTRATOR GRIFFIN: Well, this was part of  
22 both mine and Gerst's rationale for why we thought we ought



1 to fly now. I mean, there were many components to it, but  
2 part of it was as we -- first of all, we worked through the  
3 bipod foam issue. Okay. That cost us seven people, 3  
4 years ago.

5 And then in the last flight, we saw the PAL ramp,  
6 and there have been ongoing concerns about the PAL ramp for  
7 years, but the analysis capability that we have now enables  
8 us to say we can get by without the PAL ramp. The  
9 structure, it was a load-relief piece of foam. It was not  
10 an insulating piece of foam, and we can get by without it.

11 So those two significant hazards are gone.

12 We keep looking, as Gerst says. We keep looking  
13 at the data. We keep looking at the analysis. We keep  
14 questioning our assumptions, and it emerges that based on  
15 the analysis that the ice/frost ramps are a concern.

16 Now, in fact, their performance in flight has  
17 been better than the analysis would have you believe.  
18 That's good if you are going to not understand it fully.  
19 It is better if the performance is better than the  
20 analysis, but nonetheless, you look at them, and you say I  
21 would like to get rid of those, I would like a better  
22 design.

1           A couple things. When the analysis doesn't  
2 really replicate what's happening in flight or at least a  
3 flight history, as best we can tell, that tells you there  
4 is at least something about it you don't fully understand.

5           So my instinct in such situations is to proceed  
6 very cautiously. I just put that on the table. Because  
7 something I don't understand is something I don't  
8 understand, and every engineer who makes a design change  
9 will assure you, "Of course, I've got it. I understand."  
10 Well, okay. We'll think about that.

11           So the other thing we could do, of course, is to  
12 stand down for however long it takes to fully understand  
13 it, whether it's 6 months or whatever. Now, here is a key  
14 point. If we stand down for longer than 3 or 4 months,  
15 then we can't fly by this fall, which means we can't get  
16 daylight photography throughout the ascent and at MECO.

17           We want to be able to see the external tank  
18 throughout flight, throughout ascent, and after we jettison  
19 it. We need to fly in daylight to get some of the kind of  
20 test data that we have been talking about over and over  
21 again. We need data.

22           We need to be able to eventually resume -- and

1 eventually is in the next few flights -- we need to be able  
2 to resume night operations, but we can't legitimately take  
3 the risk to resume night operations until we understand how  
4 the tank behaves and see it in daylight.

5           So, if we stand down more than a few months, then  
6 we have to stand down until next spring. As best I recall  
7 the launch windows available, we don't have any good launch  
8 windows for daylight ascent until next spring. So that  
9 would be the better part of a year.

10           Now, I have said repeatedly, it is a matter of  
11 national policy above me. We are flying the Space Shuttles  
12 for one reason and one reason only, and that is to finish  
13 the Space Station project which we believe to be valuable.  
14 That has been the subject of a Presidential decision. It  
15 has been ratified by Congress.

16           Now, I have been asked repeatedly can we do this,  
17 and I have said repeatedly that, in the 25-year history of  
18 the Space Shuttle program, we have averaged -- with  
19 accidents, with downtime for cracked wiring and flow liners  
20 and all the other issues we have had over the years, we have  
21 averaged four and a half flights per year.

22           So, if we can resume flying this summer and then

1 just execute at our average rate, just business as usual  
2 for the next 4 years, '7, '8, '9, and '10, we can finish  
3 the Space Station project quite comfortably.

4 I do not want to make decisions now attempting to  
5 be ultra cautious now when I believe it is not warranted  
6 for crew safety, as I do. I do not want to make decisions  
7 now which will back risk up into the latter years of the  
8 program by having us have to fly six flights a year in  
9 order to complete the Station.

10 And again, I keep saying I want to do a Hubble  
11 repair if that is technically possible. I believe that's  
12 worth it.

13 So we are trying to balance the risks of one  
14 flight and one crew against the necessity of recognizing  
15 that we are flying these Shuttles at all in order to finish  
16 the Space Station program. I do not accept that it is good  
17 management on my part -- I do not accept that the right  
18 thing to do is to be extremely cautious now at the expense  
19 of some team later on in the future.

20 MR. ACOSTA: All right.

21 ADMINISTRATOR GRIFFIN: I think Gerst had some  
22 follow-up.

1 MR. ACOSTA: Oh, I'm sorry. Gerst?

2 MR. GERSTENMAIER: There is another aspect of  
3 this too. As Mike described, we have trouble understanding  
4 why our theories don't predict the flight performance we  
5 have seen. So, by flying and having the cameras we have on  
6 board the new solid rocket boosters, we can get two new  
7 views. If we get lucky and we see some foam come off, then  
8 we can take the time that that foam comes off and the  
9 quality that it comes off, does it come off in one piece or  
10 does it come off and break in pieces. That is very  
11 important data that will feed back into those same  
12 theories.

13 We also have preflight test data on these ramps  
14 where we have looked at the ramps with X-rays. We have  
15 looked at them with terahertz radar, and we have looked at  
16 them with sherography, which is essentially intense sound  
17 waves to pick up imperfections on the surface of the foam.

18 So we know there are some imperfections in the foam going  
19 into these tanks.

20 We have analyzed those imperfections to make sure  
21 that they are all okay and they are not a safety-of-flight  
22 concern, but how those imperfections perform in flight will

1 add directly back into our theory of foam performance.

2 Then we can take that theory of foam performance, and now  
3 we can target a specific design fix that will end up with a  
4 better ice/frost ramp than we would have not by flying.

5 So, if we can analyze this and test this fully on  
6 the ground, we wouldn't need to fly to gain this data to  
7 make an improvement, but by flying and taking some small  
8 risk with flying, we can gain more data that helps us make  
9 a faster improvement, and it improves our overall safety to  
10 flight and allows us to make a better design change.

11 So that is another aspect, totally independent of  
12 the schedule discussion, that is important from an  
13 engineering standpoint to understand.

14 QUESTIONER: Yeah. I made that point briefly  
15 earlier, but not in as great a depth. So that's good.

16 I mean, we've got like three different foam loss  
17 mechanisms here, and we don't always know which ones are  
18 responsible for what piece coming off, and by knowing when  
19 it comes off, we can infer a lot about which damage  
20 mechanism is in play. If you know which damage mechanism  
21 is in play, you have a better chance of designing the right  
22 fix.

1           This is a complex, subtle, multi-dimensional  
2 problem that, frankly, is not susceptible to a sound-bite  
3 answer.

4           MR. ACOSTA: Let's say back over here. I will  
5 come back over to you, I guarantee. Let's go to Irene.

6           QUESTIONER: Thank you. Irene Klotz with Reuters  
7 for Dr. Griffin.

8           The Vision for Space Exploration does not say to  
9 finish the Space Station at all costs, and you have made  
10 your view very clear about where you would stand if there  
11 was another accident or serious problem with the Shuttle.

12           If that were to occur, would you immediately end  
13 NASA's involvement in construction of the Station and move  
14 on to Constellation and the next program, or have you given  
15 some thought and come up with any contingencies for doing  
16 something to expand the Station beyond its present  
17 configuration?

18           ADMINISTRATOR GRIFFIN: You have interviewed me  
19 enough times to know I don't speculate. So I can't answer  
20 your question.

21           There are way too many things that would be in  
22 play if we had a significant problem with the Shuttle. I

1 just can't answer that right now.

2 MR. ACOSTA: All right. Let's come back over  
3 here, as I promised.

4 QUESTIONER: Yes. S.V. Daté with the Palm Beach  
5 Post for Dr. Griffin.

6 Following up on the FOIA question, I am curious  
7 what were the adverse consequences to the agency last year  
8 by releasing the briefing materials for, I believe, the  
9 foam problem from the last mission.

10 ADMINISTRATOR GRIFFIN: I am not sure I -- I  
11 didn't say there were adverse consequences.

12 What I said was that to release material which is  
13 predecisional and which our people put forth knowing that  
14 it is predecisional and therefore is not releasable and  
15 then if we go back later and tell them, "Well, we are  
16 releasing it anyway," that compromises a certain trust  
17 within our agency among our people, and I am not going to  
18 do that.

19 QUESTIONER: So the material that you released in  
20 flights previous to last year, to Columbia, is what you are  
21 not releasing now different from that, or was the type of  
22 material you are talking about here --



1 ADMINISTRATOR GRIFFIN: I don't know what you are  
2 talking about.

3 QUESTIONER: -- never released?

4 ADMINISTRATOR GRIFFIN: We released FRR material  
5 for Columbia and in the wake of the failure investigation,  
6 and on 114, we released briefing slides which, as I said  
7 earlier, if I had it to do over, I wouldn't, just because  
8 then I wouldn't have to deal with questions like what  
9 you're asking.

10 I don't want to have a policy of the moment. I  
11 want to have a policy. I want to have that policy  
12 consistent with law and custom, and, in fact, consistent  
13 with law and custom, predecisional materials are not  
14 released, and we are not releasing them.

15 I have explained why we don't release them, and I  
16 can do it again, if you like, but I did explain it.

17 QUESTIONER: If you wouldn't mind, could you  
18 explain it again? Because I'm having trouble. Because I  
19 remember 10 years ago, 14 years ago, you would release a  
20 lot of what I assume would be predecisional material along  
21 with your FRR material after the fact. Now, is this  
22 different somehow?

1 ADMINISTRATOR GRIFFIN: I wasn't here then and  
2 don't know about that. I can only address what we're doing  
3 in my tenure.

4 The reason for not releasing predecisional  
5 material, as recognized under FOIA, is that decision-makers  
6 have a right to full and free opinions and discussion  
7 between and among their staff in an uninhibited environment  
8 in which people are not concerned about the effect of their  
9 words or briefing materials being released to the world at  
10 large. They have a right to that, and we are sticking by  
11 that.

12 MR. ACOSTA: All right. Let's move on to the  
13 next subject. Let's go right here in the front row.

14 QUESTIONER: Kelly Young with New Scientist for  
15 Dr. Griffin.

16 I apologize if you have addressed this  
17 previously.

18 You said there is no crew risk on this one  
19 because you have the Station. So what does that mean for a  
20 possible Hubble servicing mission? Is the idea that you  
21 could drive down the risk by that point?

22 ADMINISTRATOR GRIFFIN: Let me first correct, I

1 certainly didn't say there was no crew risk on this  
2 mission. Space Shuttle flights are risky.

3           What I said was in flying with these ice/frost  
4 ramps at this time and flying to the Station that, if there  
5 is -- and I believe there is a very low probability of  
6 this, but if there is damage on the Shuttle, to the  
7 Shuttle, on ascent, because of the ice/frost ramps, that we  
8 can sustain the crew on Station and we can eventually get  
9 them off.

10           Will it be an emergency procedure? Of course,  
11 but we can get them off.

12           Now, with regard to Hubble, your point is quite  
13 well taken. We cannot fly to Hubble without knowing that  
14 the risks due to foam damage on the orbiter are going to be  
15 minimal, very minimal. They need to be consistent with the  
16 other risks that we accept in order to fly the Shuttle at  
17 all.

18           I would not support flying a Hubble mission until  
19 and unless the ice/frost ramps are changed to change to a  
20 design which gives us a solid belief that they are much,  
21 much better than the ones we have today or until and unless  
22 we have that "aha" moment and understand why today's

1 ice/frost ramps really are good and they're just fine and  
2 our models are wrong. Either one of those two would be  
3 fine.

4 I mean, again, I will return to the fact that our  
5 ice/frosts ramps perform in flight somewhat better than our  
6 modelers and analysts would have us believe, which means  
7 that we don't truly and fully understand the problem.  
8 That's good. I'm glad that the modeling is conservative,  
9 but we either need to understand exactly why these  
10 ice/frost ramps perform as they do and that it's okay or we  
11 need a better ice/frost ramp before we would fly to Hubble.

12 MR. ACOSTA: All right. Let's go to Jay Barbree,  
13 second row, and then we'll come back over here to Craig.

14 QUESTIONER: Dr. Griffin, Jay Barbree with NBC.

15 Sticking with Hubble, when they launched Hubble  
16 into orbit, it was a need to get above the atmosphere. Now  
17 that our ground telescopes have atmospheric accommodation,  
18 can give you the same visual pictures as you can get from  
19 Hubble now, what is it about the nonvisual spectrum that  
20 would make it worthwhile and worth the risk to fly to  
21 Hubble now and repair it?

22 ADMINISTRATOR GRIFFIN: Well, I am not an

1 astronomer, but I will offer a couple points of view on  
2 that.

3           First of all, I am not certain that the  
4 resolution of ground-based optics even with atmosphere  
5 compensation is as good as what we can get with Hubble in  
6 its fine-pointing mode. I won't say you are wrong, but I  
7 don't know that to be true.

8           But also remember Hubble was put in place not --  
9 it certainly was put in place because of its very fine  
10 optical resolution, but it was also put in space in order  
11 to enable very deep field, very deep sky surveys, way back  
12 to the Big Bang and, if you will, nearly the dawn of time,  
13 and it can do that because it can stare at a fixed point  
14 for a very long period of time.

15           We can stare at a fixed point in space because we  
16 go around the Earth in orbit, and if that point is lost  
17 behind the Earth, we can reacquire when we come out from  
18 behind the Earth and accumulate days and days of observing  
19 time, if necessary, on a particular target. That is  
20 difficult to do, very difficult to do from the ground.

21           More than all of that, Hubble -- even as other  
22 astronomical facilities have crept up on it, Hubble

1 nonetheless remains a world-class astronomical facility,  
2 capable of helping us to understand the universe in ways  
3 that we have not previously and as such is worth, I think,  
4 maintaining.

5 I would remind you that within the last decade,  
6 we have understood -- this is an odd statement to make. We  
7 have understood that we don't understand what 95 percent of  
8 the universe is made of. Between so-called dark matter and  
9 dark energy, the total and the mass equivalent of that dark  
10 energy, we know that we don't understand what most of the  
11 universe must be composed of. The visible matter that we  
12 see is 5-or-so percent of the known universe. That is a  
13 very humbling statistic. We are able to make that  
14 statement with confidence because of Hubble.

15 Now, I don't know what unknown unknowns are yet  
16 to be discovered by Hubble or other astronomical  
17 instruments, but I would submit that if we can repair it,  
18 we will.

19 Now, if we cannot, we won't, but I am not ready  
20 to dismiss it out of hand at present. I believe that we  
21 will have a good solid ice/frost ramp design or we will  
22 understand completely to our satisfaction why this one

1 works and that it's okay, and with that taken care of, the  
2 other foam improvements that we had made on the external  
3 tank would be, I think, sufficient to allow us to undertake  
4 the Hubble flight.

5 I mean, Gerst, you're as -- any comments? You're  
6 as close to this as I am.

7 MR. GERSTENMAIER: No. I think those are good  
8 comments.

9 I think the other thing that is really important,  
10 again, is I hear us just talking about foam, foam, foam.  
11 You know, there's other things that we need to be just as  
12 prepared about for the Hubble mission to make sure we are  
13 really ready to go do that mission, other than just foam.  
14 So it is really wrong for my team to focus on one item and  
15 just hone in on that one item.

16 We better be in a continuous learning mode,  
17 learning how to operate this Shuttle, learn how it  
18 integrates, how the systems work together, and be ready to  
19 go do that mission when it comes up and not just get  
20 focused on this single issue.

21 So it is really important that I keep my team  
22 looking across the board to be really ready to take the

1 most out of this mission. We have a tremendous challenge  
2 in front of us in terms of assembly and the Hubble mission,  
3 and the way we succeed as a team is by looking across the  
4 board and finding that issue out there that you guys don't  
5 even know anything about yet, that my engineers are just  
6 starting to think about, and they are off working on that,  
7 so we can anticipate that problem, have it corrected, and  
8 you never see about it, you never hear about it, and we are  
9 ready to go fly.

10 So the message here is don't get fixated on what  
11 we are talking about, just foam today. We need to think  
12 about those other things and really be prepared for the  
13 challenge that's in front of us.

14 MR. ACOSTA: And more importantly, don't ask  
15 questions about it. Right?

16 [Laughter.]

17 MR. ACOSTA: All right. Let's come back here to  
18 Craig.

19 QUESTIONER: Thanks. Craig Cavault with Aviation  
20 Week.

21 One big-picture Washington kind of question here.  
22 Other than normal liaison with the White House for things



1 like the Vice President's visit and so forth, has the White  
2 House asked for or has NASA provided any extra brief-up for  
3 either the White House Science Advisor's office or even the  
4 President himself on issues related to 121?

5 ADMINISTRATOR GRIFFIN: Gee, I hate to disappoint  
6 you, but there is so much less there than meets the eye  
7 that I hardly know where to start.

8 We provided a routine briefing on preparations  
9 for -- by we, I mean Gersten and I provided a routine  
10 briefing on STS-121 status to, I would say, Jack Marburger,  
11 except it was also Jack and other members of the Executive  
12 Office of the President, a couple weeks ago, post FRR to  
13 let them know how we were, and they were perfectly  
14 comfortable with it.

15 I have had no other instructions from the White  
16 House on this matter.

17 I hate to say this. I actually think they think  
18 I know what I'm doing.

19 [Laughter.]

20 ADMINISTRATOR GRIFFIN: And they recognize, they  
21 understand fully that space flight is dangerous and  
22 difficult, that we live in a time when we are learning how

1 to do space flight, not a time when we know how to do space  
2 flight. These are learning steps that we are taking, as  
3 humbling as that may be to observe, and I think they fully  
4 understand that, and I think they think that this team is  
5 doing the best it can.

6 MR. ACOSTA: All right. Time for some more  
7 questions. This lady in the second row has had her hand up  
8 for a long time.

9 QUESTIONER: Lisa Stark with ABC News for the  
10 Administrator.

11 It was reported today that during the Flight  
12 Readiness Review, there was also some concerns raised by  
13 the Inspector General's office to you about this decision  
14 to launch and some concerns about whether NASA was playing  
15 the odds and whether you were bowing to any schedule  
16 pressure. Can you address those issues and what your  
17 response was or would be?

18 ADMINISTRATOR GRIFFIN: I received a  
19 communication from the NASA Inspector General commenting on  
20 a separate communication from the Earth Space Safety  
21 Advisory Panel, which is one of the congressionally  
22 chartered group that advise NASA. Gee, I don't remember in

1 detail the text of their letter or my response.

2 I responded to Inspector General Cobb's points,  
3 and he sent me a follow-up e-mail saying he was satisfied  
4 and comfortable with my decision-making.

5 So I guess I am happy to try to answer your  
6 question, but it needs to be a little bit more specific.

7 QUESTIONER: Well, I mean, what was reported was  
8 that one of the concerns was, I believe, an e-mail that had  
9 said that the concern was NASA was playing the odds, "NASA  
10 and Mike Griffin are playing the odds with this launch,"  
11 and then a second concern about whether schedule pressure,  
12 how big a role schedule pressure was playing in the  
13 decision to go.

14 ADMINISTRATOR GRIFFIN: Okay. Well, let me  
15 comment on the first one, then. I'll try to answer both of  
16 those.

17 First of all, you are not going to like this, and  
18 I am sure I am not going to like how it sounds in print,  
19 but we are playing the odds. What you pay us for as  
20 taxpayers is to understand those odds in great detail.

21 When we say "playing the odds," what we are  
22 talking about is risk management, and risk isn't expressed

1 to engineers. Risk is expressed in terms of probability  
2 and statistics.

3 I think we have got a team here that understands  
4 that discipline as well as any group I've seen. For  
5 example, we know that the odds are one in a couple of  
6 hundred or so that a micro-meteorite or a piece of orbital  
7 debris will bring down the Shuttle. We have only in recent  
8 years come to understand that particular risk, and we throw  
9 it in the risk basket along with all the others.

10 We try very hard to calculate the probability of  
11 bad things occurring across the whole spectrum of events  
12 that could occur in space flight, and in fact, the  
13 discipline with which we do that is loosely referred to as  
14 "probabilistic risk analysis." We try to calculate the  
15 probabilities of losing an orbiter or losing a crew, losing  
16 this or that component.

17 So, as taxpayers, you pay us to play the odds.  
18 It is called "risk management." So I can't accept that as  
19 a criticism.

20 Now, if you were to say or if someone was to say  
21 that we were doing it incorrectly, then I'd be all ears.  
22 I'd want to fix that, but that's what we do for a living.

1           Now, with regard to schedule pressure, again,  
2   this may be politically incorrect, but there are no  
3   activities that humans undertake that don't have a schedule  
4   associated with them. It matters whether you finish a job  
5   this year or in the next decade.

6           I would struggle to think of an activity that the  
7   Government undertakes -- and this is a Government activity  
8   -- or an activity that industry undertakes that doesn't  
9   have a desired performance level, an allowable expenditure,  
10   and a desired time frame to complete it.

11           Managers such as Gerst and I get paid to balance  
12   performance, cost, and schedule, and against risk, and by  
13   the way, risk has more than one flavor. There is cost  
14   risk, the probability of exceeding the allowable cost.  
15   There is schedule risk, the probability of blowing your  
16   schedule, and then there is technical risk, the risk of not  
17   meeting the desired performance goals as well as, of  
18   course, when humans are involved, the human risk. We have  
19   to try to balance those various parameters.

20           We have a schedule for flying out and retiring  
21   the Shuttle and assembling the Station. As I indicated  
22   earlier, just taking our average flight rate, it is a

1 schedule we can meet, but we need to get on with things.

2 I do not think -- I absolutely do not think and  
3 do not accept that we are being unduly influenced by  
4 schedule pressure, but we pay attention to schedule because  
5 time is money, and that matters.

6 MR. ACOSTA: All right. Let's go -- who has not  
7 had a chance to ask a question? Let's go down the line.  
8 The gentleman in the maroon shirt on the left-hand side.

9 QUESTIONER: Dr. Griffin, Tom Boyles [ph], Tipton  
10 Conservative.

11 On the foam, how much consideration is given to  
12 the fact that you have a venturi between the tank and the  
13 orbiter and the tank and both solids as far as causing a  
14 pressure to blow off foam?

15 ADMINISTRATOR GRIFFIN: Well, we do, in fact,  
16 worry that some of our foam loss is aero-induced,  
17 aerodynamically induced foam peeling, and, of course, that  
18 is reflected in the computational fluid dynamic models of  
19 how the orbiter flies out to the atmosphere.

20 We pay a lot of attention to that issue and to  
21 the transport of foam once it is released. Frankly, if the  
22 aerodynamics were such that none of the foam released could

1 contact the orbiter, we wouldn't care how much came off,  
2 but, in fact, some of it can. Some relatively small  
3 fraction of it can contact the orbiter, and that is what we  
4 worry about.

5 The answer to your question is it is in the  
6 models that we used to predict the aerodynamic flows, and  
7 they are quite sophisticated these days.

8 QUESTIONER: What is the difference between foam  
9 and ice, what foam, you might say?

10 ADMINISTRATOR GRIFFIN: Well, if you will recall,  
11 the foam is on there to prevent ice from forming, and we  
12 have very strict criteria about where ice can be and how  
13 much of it we will tolerate before we launch, and that will  
14 call a dead halt to launch processing if we have ice balls  
15 beyond a certain size in certain places.

16 If you will recall, not this time last year, but  
17 back in May of last year, instead of saying we were ready  
18 to go, I said we need to stand down for a couple of months  
19 because, at that time, using these modeling tools I was  
20 talking about, our CFD tools, we frankly had not finished  
21 the analysis of the ice debris.

22 We had analyzed three or so critical cases, and

1 we had identified seven or eight critical cases, and we  
2 just plain hadn't had time to finish the analysis by the  
3 time we were ready to launch in May. So there was nothing  
4 else holding us up, but if you will recall, I stood us down  
5 at that point, getting praise from some and criticism from  
6 others. I stood us down at that point until we had  
7 finished all of the critical ice debris cases because ice  
8 could be a real problem. So we pay attention to it.

9 MR. ACOSTA: All right. We have time. We've got  
10 a little less than 10 minutes, just to keep people in track  
11 of time. Right here, let's stay with the third row, who  
12 hasn't asked a question.

13 QUESTIONER: Thank you. My name is Wada [ph]. I  
14 am with Japan's [inaudible] newspaper. I have a question  
15 for Dr. Griffin.

16 Could you try to describe the importance or  
17 significance of a successful launch of Discovery and its  
18 return to Earth in connection with your effort to encourage  
19 current and potential foreign partners to take part in  
20 future space exploration projects beyond ISS?

21 Thank you.

22 ADMINISTRATOR GRIFFIN: Well, we at NASA believe,



1 and we at the policy-making level in this country believe,  
2 that the proper purpose of space exploration is to explore.

3 That means going out beyond Earth orbit, once again, to  
4 the Moon and then later to Mars and near-Earth asteroids  
5 and other places.

6 We believe that this is an activity that the  
7 United States can lead, but that will be much richer, much  
8 fuller, much more robust, much more rewarding if we can do  
9 so in connection with other nations as we are doing on the  
10 Space Station program.

11 Quite frankly, I think if we are unable to  
12 complete the project that we have before us, the Space  
13 Station, we will have a certain lack of credibility in  
14 encouraging others to join us for the exploration of the  
15 Moon and Mars. So it is important to finish what we have  
16 started.

17 Tomorrow's launch, if the weather permits us to  
18 launch tomorrow, is a step back on the road to completing  
19 the Station, and as such, it's important.

20 Now, as I indicated earlier, every single flight  
21 we have left in the Shuttle system is important. There are  
22 no unimportant flights. If they were unimportant, trust

1 me, I wouldn't do them. But it is important. It is not  
2 more important than the others.

3 MR. ACOSTA: All right. A few more questions.  
4 Who hasn't had a chance to ask a question? Let's go over  
5 here in the corner by the door.

6 QUESTIONER: Steven Young with SpaceFlightNow.com  
7 for the Administrator and perhaps Mr. Gerstenmaier as well.

8 Could you talk a little bit about your criteria  
9 for dropping the requirement for daylight launches? For  
10 example, if you do have to go in and redesign the ice/frost  
11 ramps, would that mean you would have to go back to having  
12 daylight conditions for photography and so on?

13 MR. GERSTENMAIER: I think one thing we will get  
14 out of this flight is that the new cameras we have added on  
15 the solid rocket motors, it will be interesting to see how  
16 much the plume from the solid rocket motors illuminates the  
17 tank. We may be able to get some illumination from the  
18 solid rocket motors that will provide enough illumination  
19 that we can see good enough, things, with the cameras we  
20 have on board. So we will get some camera performance data  
21 that may allow us to relax some of our lighting conditions.

22 We are also looking at can we change when we need

1 to see the tank, is it more important to see it at external  
2 tank separation, is it more important to see it during  
3 ascent.

4 We also have lots of radar we have added here at  
5 KSC to track particles coming off the tank. Again, we are  
6 going to go look at that radar performance and see how good  
7 that radar performance is and can that augment what we can  
8 see with our visual cameras, and again, maybe we can relax  
9 the constraints associated with that.

10 So I think we are approaching this, again, kind  
11 of as an investigation, looking at different ways to see  
12 where the right time is to relax that constraint. We will  
13 also see where we are in the design process of the foam and  
14 the foam loss to determine the right things to go do from a  
15 lighting standpoint.

16 So we are looking at ways other than just  
17 launching in light or not launching in light. We are  
18 looking at other systems we may be able to use to give us  
19 the same data.

20 ADMINISTRATOR GRIFFIN: One purpose of launching  
21 in daylight is to validate those other systems. If we can  
22 cross-correlate one system against another, we may very

1 well be able to launch without daylight, but, first, we  
2 need to launch in daylight.

3 MR. ACOSTA: All right. Questions. Who hasn't  
4 had a chance to ask a question? All right. Let's go right  
5 here in the front row.

6 QUESTIONER: [Inaudible] National Magazine. I've  
7 got two questions.

8 First of all, is 2010 a realistic target date for  
9 the demonstration for the commercial orbiter transportation  
10 services ongoing project, considering the fiscal year '07  
11 budget, you see such a big reduction in the money for that  
12 particular program?

13 And secondly, in terms of the Shuttle flight  
14 sequence, although, yes, your average flight rate, you  
15 could achieve, say, 16 flights. You have also got the  
16 extra difficulty of the '09 ascent flight test  
17 demonstration, which potentially could go from Launch  
18 Complex 39, and you require some sort of transportation  
19 vehicle to go for the VAP [ph], for the -- for the Aries  
20 One and all those infrastructure issues relating to  
21 operating Aries One even if it's a dummy with the Shuttle  
22 itself.

1           ADMINISTRATOR GRIFFIN: Well, I am not going to  
2 comment on COTS and whether 2010 is realistic or not  
3 because we are in source selection on that, and I want to  
4 see what the contractors are going to propose. If 2010 is  
5 not realistic, we will see where we go from there, but that  
6 is all I am going to say at this time.

7           Now, about Complex 39, Gerst, I think you --

8           MR. GERSTENMAIER: We have been working very  
9 closely with Exploration to figure out the right flow of  
10 where there hardware can go out to the launch pad and when  
11 they can use that launch pad to go do their demonstrations.

12           We have looked at potentially releasing a mobile  
13 launch platform to them to go ahead and start doing some  
14 integration of hardware on top of that. We are looking to  
15 releasing Pad 39-B to them at the right time to go ahead  
16 and start for this demonstration flight. So we are kind of  
17 working very much hand in hand.

18           So, when we talk about these Shuttle flights, we  
19 are building essentially an integrated sequence along with  
20 Exploration that includes their development test flights  
21 and includes where they want to go with Exploration. So we  
22 are factoring that into our decision. We are factoring

1 that into our flight manifest. We are factoring that into  
2 overall planning to make sure we can accommodate what they  
3 want to go do and make sure we don't compromise the Shuttle  
4 side to get our flights done by 2010.

5 MR. ACOSTA: I think we had somebody in the back  
6 corner that hadn't had a chance to ask a question.

7 QUESTIONER: Hi. I'm Allen Boyle [ph] with  
8 MSNBC.com. This would be for Dr. Griffin.

9 Considering that the flight rate does vary  
10 between less than one per year to four and a half or more  
11 per year, one way to mitigate that risk in the end years  
12 would be to extend the end. I know that you are strong  
13 about retiring the Shuttle in 2010, but could you explain  
14 what would the risk be in extending the life of the Shuttle  
15 fleet, if necessary to complete the construction of the  
16 Space Station?

17 ADMINISTRATOR GRIFFIN: Well, it's not so much  
18 that there is -- well, there is risk. There is cost risk  
19 to our overall program.

20 We don't plan our program by waking up each  
21 morning and deciding what we are going to do. We plans  
22 years ahead.

1           In a program-driven -- the Space Shuttle, as I  
2 think all of you know, has a fairly low marginal cost to  
3 launch another Shuttle. It is basically the cost of the  
4 crew for the period of time, plus the ship's set of  
5 hardware. That is not very much, a couple hundred million  
6 dollars. I don't have the data off the top of my head, but  
7 it's like that.

8           Whereas, it has a very high fixed cost to own all  
9 of the facilities and all of the infrastructure to allow  
10 Shuttle flights to take place at all.

11           As a manager, then, with a program having those  
12 characteristics, what I have to have is I have to have a  
13 date when I am going to stop. If the program were  
14 dominated by the variable costs per flight, then I would  
15 want to know how many flights I was going to do because  
16 that would control my overall budget, but if I am going to  
17 have any sort of control of my overall budget with the  
18 Space Shuttle program, I have to decide when I am going to  
19 stop flying and stick to that because each year in which I  
20 elect to maintain Shuttle infrastructure is another several  
21 billions dollars. That matters.

22           So it was decided, in fact, before I took this

1 job, that the Shuttle would be retired in 2010. Therefore,  
2 we are planning the program in as intelligent a way as we  
3 can to allow it to accomplish its primary objectives and  
4 yet retire in 2010.

5 If I don't do that, then I have a major unplanned  
6 expense that occurs in 2011 and a consequent cost risk to a  
7 bunch of other things that NASA wants to do and that the  
8 Nation wants us to do.

9 QUESTIONER: Would it be natural, though, to have  
10 a time period perhaps in the future to revisit that  
11 decision? Would you allow that that kind of decision would  
12 be revisited if necessary as you get out further?

13 ADMINISTRATOR GRIFFIN: No.

14 MR. ACOSTA: All right. Question in the corner  
15 that hadn't had a chance. Have to step up. There you go.

16 QUESTIONER: Hi. Rory O'Neil with Metro  
17 Networks.

18 Tomorrow, we are basically hoping that a piece of  
19 foam the size of my shoe doesn't come falling off the tank,  
20 and I am wondering. Being in such a fragile position for  
21 the program, almost the whole agency seems to be at a  
22 fragile point. Do you think that it is in a fragile



1 location right now, and how do you launch 16, 17 missions  
2 in the next 4 years, being almost in a delicate state?

3 ADMINISTRATOR GRIFFIN: We don't think we are in  
4 a delicate state. I think that's the difference between  
5 perception and reality.

6 Following up on Gerst's comment, I don't care if  
7 a piece of foam the size of your shirt comes off, if it is  
8 relatively thin and light, and if the wrong piece of foam  
9 came off, if a piece of slaw came off that is quite dense,  
10 I might worry about it if it were the size of my fist.

11 Again, it is what kind of foam, where, when, and  
12 what happens to it afterward.

13 If we have a major unexpected piece of foam come  
14 off that we haven't seen before, then clearly we are quite  
15 vulnerable. It says that there is a lot about this that we  
16 still don't understand. We don't think that is the case.  
17 We are not expecting that.

18 I don't feel vulnerable. This is the first step  
19 back toward restoring the Shuttle to a regular steady  
20 operational sequence that is going to allow us to finish  
21 the Space Station project.

22 MR. GERSTENMAIER: Again, I think the other

1 aspect is if we use our sensors to capture when the foam  
2 comes off, what time, and the quality that comes off, that  
3 can be very enlightening to us from a fixing-our-theory  
4 standpoint and putting our models together. So, again,  
5 that may add tremendously to our database that allows us to  
6 essentially get right on with what we want to go do.

7           So, again, it may not be a bad thing if it  
8 surprises a little bit, if it fits in with our models and  
9 it clarifies what we are seeing. So we are going to learn  
10 something out of this, which is exactly why we are going to  
11 fly.

12           ADMINISTRATOR GRIFFIN: I think the fair comment  
13 that could be made and that was made by the Columbia  
14 Accident Investigation Board is that this is an issue that  
15 NASA should have caught and should have paid attention to a  
16 lot sooner. No argument. We are paying attention to it  
17 now. This is the time in which we can, but we are going  
18 about an understanding of this system and fixes to it, I  
19 think, in a very workman-like, a very solid  
20 engineering-like manner.

21           MR. ACOSTA: All right. Right up here.

22           QUESTIONER: Thank you. I name is Akimi Shamoto

1 [ph] from Keodonia [ph] [inaudible] Japanese Wire Service.

2 My question is related to the Exploration Update  
3 which we had just before your press conference, and  
4 according to that, the first piloted flight of CEV is  
5 scheduled 2014, September of 2014 at the earliest. That  
6 means there are 4-1/2 years that the United States doesn't  
7 have its own human space flight vehicle. Do you have any  
8 intention to shorten that period, and if yes, how would you  
9 do that?

10 Sorry. For Dr. Griffin.

11 ADMINISTRATOR GRIFFIN: Well, the gap in space  
12 flight, human space flight, between the retirement of the  
13 Shuttle and the operational use of the new system, the CEV  
14 and the CLV, has been of concern to us. It has been of  
15 concern to me since I took this job, and we are doing  
16 everything we can to narrow it, but, fundamentally, it is  
17 budget-driven, and there are many competing priorities for  
18 our budget.

19 Beyond that, I am not going to go today because  
20 this is a Space Shuttle press conference, and I am not  
21 commenting on our new systems.

22 MR. ACOSTA: All right. Anybody that hasn't

1 asked a question that would like to ask a question?

2 All right. Third row right here, and that will  
3 probably wrap us up today. We have gone a little more than  
4 an hour.

5 QUESTIONER: Jackie Goddard [ph] for the Times of  
6 London.

7 We hear a lot about that you say we have to keep  
8 flying the Shuttle to fulfill commitment to the Space  
9 Station. What is it specifically that you would explain to  
10 the public is important about what is happening on the  
11 Space Station and why mankind would be the poorer for not  
12 knowing the experiments that are going on up there?

13 ADMINISTRATOR GRIFFIN: Well, to me, the most  
14 important thing about the Space Station has always been the  
15 ability to fly a large piece of hardware with crew for a  
16 long time and learn the things that we know we don't know.

17 I have said this a number of times in other  
18 venues, and some are probably bored hearing it, but I will  
19 happily say it again. We want to go to Mars. We want to  
20 go to the Moon. We want to go beyond that eventually.  
21 There are things we don't know.

22 In fact, the first trip to Mars, I can give you

1 kind of a thought experience that we could do here on  
2 Earth. Until you can put a crew in a submarine, seal up  
3 the hatches and tell them to go on a 3-year voyage, and  
4 everything that they need has got to be in the submarine  
5 when they leave port and don't bother to come back early,  
6 until you can do that, you are not ready to go to Mars.

7           Now, we couldn't do that today. We need to learn  
8 how to do that, of course, in the proper environment, not  
9 on a submarine, in space. We need to learn how to do that.

10       We need to learn how to support and sustain people for  
11 years at a time and hardware for years at a time in an  
12 environment where they are relatively close to earth and  
13 can be taken care of if we don't yet know what we need to  
14 know.

15           The Space Station is the place where we can learn  
16 to do that. We will also learn to be doing it on the Moon  
17 because we have to survive on planetary surfaces. It is a  
18 learning step as we progress outward.

19           Now, if you value that outward progression, the  
20 outward expansion of the frontier for humankind, then the  
21 Space Station is important to you.

22           If you don't value exploration and expansion of

1 our frontiers and a utilization of the resources of the  
2 solar system for humankind in the distant future, if you  
3 don't value that as a future for humanity, then you will  
4 not value the Space Station.

5 MR. ACOSTA: All right. That is going to  
6 conclude today's Administrator briefing. If you want to  
7 learn more about STS-121, please go to our website,  
8 [www.nasa.gov](http://www.nasa.gov).

9 Hope to see everybody back here tomorrow after a  
10 successful launch. Have a great day.

11 [End of an Overview Briefing with Administrator  
12 Griffin on June 30, 2006.]

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